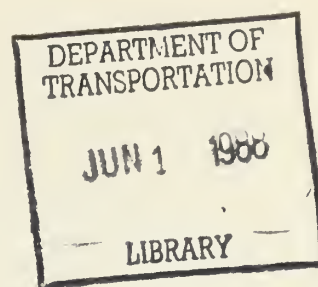


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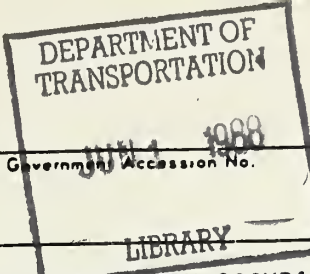
December 1985

Evaluation of New York State's Mandatory Occupant Restraint Law--Volume I Observational Surveys of Safety Restraint Use in New York State

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16. Abstract This is the final report on the results of three observational surveys of restraint use by front seat occupants conducted as part of the evaluation of New York's Mandatory Occupant Restraint Law. Observations were conducted at a probability sample of sites selected from all twelve Standard Metropolitan Statistical Areas and four additional randomly selected counties. A baseline survey was conducted in October 1984 and statewide post-law surveys were conducted in April 1985 and September 1985. In addition, a smaller survey was conducted in four selected areas of the state in January 1985. Finally, nighttime restraint use was also measured at a non-random subsample of sites during each of the three statewide surveys of front seat occupants. There were two major findings from the series of observational surveys. First, there was a large increase in safety restraint use in New York State after implementation of the law (from 16% in October 1984 to 57% in April 1985). Second, the high level of usage declined over time (to 46% in September 1985). Usage rates varied more by region of the state than by day of the week, or time of day. Usage rates must be examined in conjunction with casualty rates to determine whether the Mandatory Occupant Restraint Law has achieved the goal of reducing traffic fatalities and injuries. A future study will analyze 1985 motor vehicle accident data to determine the effects of the law on fatality and injury rates in the first year.					
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EXECUTIVE SUMMARY

New York State's Mandatory Occupant Restraint Law was implemented on December 1, 1984 and enforcement began January 1, 1985. This is the final report on four observational surveys conducted to determine the effects of the law on safety restraint use by front seat occupants. Three statewide surveys were conducted. A statewide pre-law survey was conducted in October 1984 to measure baseline usage rates. The first statewide post-law survey was conducted in April 1985 and the second in September 1985. In addition, in January 1985, a smaller survey was conducted in four selected areas of the State to provide a measure of restraint use immediately after implementation of the law.

STATEWIDE SURVEYS OF FRONT SEAT OCCUPANTS

A probability sample of observation sites was drawn from each of New York State's twelve Standard Metropolitan Statistical Areas (SMSAs) and from four counties chosen to represent the rest of the State. In each survey, observations were conducted at the same sites and the same schedules and methods were used.

Before the Mandatory Occupant Restraint Law went into effect, 16 percent of the front seat occupants observed were wearing safety belts. In the first statewide post-law survey in April 1985, the usage rate for New York State rose to 57 percent. In the second statewide post-law survey in September 1985, the usage rate dropped somewhat to 46 percent. Within each of the three regions of the State (Upstate, New York City, Long Island) there was more than a 40 percentage-point increase in usage between the baseline survey and the first post-law survey. Usage in the Upstate region increased from 19 to 60 percent, in New York City from 14 to 56 percent, and on Long Island from 17 to 58 percent. In the second post-law survey,

the safety belt usage rate declined in each region. The Upstate rate decreased by seven percentage points to 53 percent, New York City's rate decreased by 16 percentage points to 40 percent and Long Island's rate decreased by 11 percentage points to 47 percent.

The relationship between weekday and weekend usage rates varied in each of the surveys. However, after the initial increases measured in the first post-law survey, both weekday and weekend usage rates declined. Finally, safety belt usage during rush hours was generally higher than usage during non-rush hours. Rush hour and non-rush hour usage rates over time conformed to the same pattern as all other usage rates.

SURVEYS OF SELECTED AREAS

In addition to the three statewide surveys, four of the Standard Metropolitan Statistical Areas (Albany, Buffalo, Nassau-Suffolk and Rochester) were also surveyed in January 1985. The results from this smaller survey provided usage rate estimates for these selected areas of New York State immediately after full implementation of the law. In January 1985, the usage rate in each area was nearly four times that of the October baseline rate. These January usage rates ranged from 75 percent in Albany to 63 percent in Buffalo. In the April 1985 statewide post-law survey, there was a significant decrease in the usage rate in each SMSA except Buffalo where usage remained at 63 percent. In the September 1985 statewide post-law survey, usage in each SMSA, including Buffalo, dropped further. However, usage in Albany (54%), Buffalo (57%) and Rochester (56%) stayed above 50 percent while usage in Nassau-Suffolk decreased to 47 percent.

SURVEYS OF USAGE AT NIGHT

Smaller non-random surveys of nighttime safety belt use were also conducted during each of the three statewide surveys of front seat occupants.

Before the mandatory use law took effect, the statewide usage rate at night was 12 percent. In the first post-law survey, the rate increased to 50 percent, but declined to 40 percent in the second post-law survey. There was little difference between usage rates on weekday nights and weekend nights. Of the three regions, New York City experienced the largest decrease in nighttime usage between the first and second post-law surveys.

Finally, the nighttime usage rates for each survey were generally lower than the daytime rates calculated at the same sites. However, the difference between these nighttime and daytime rates was consistently less than five percentage points. Furthermore, in the second post-law survey the difference between daytime and nighttime usage statewide had narrowed to less than one percentage point.

DISCUSSION

Two major findings emerge from the series of observational surveys of safety restraint use which were conducted in New York State between October 1984 and September 1985. First, with the implementation of the Mandatory Occupant Restraint Law there was a substantial increase in safety restraint use in New York State. Second, the dramatic increase in usage which occurred immediately after the law took effect was not sustained over time.

Differences between weekend and weekday usage rates or between rush hour and non-rush hour usage rates did not appear to be important factors in explaining the decline in usage over time. Significant variations were found, however, among the three regions of the State. In all three

surveys, the highest usage was measured in the Upstate region and the lowest in New York City. While similar increases in usage occurred in all three regions in the first post-law survey, larger decreases in usage in the New York City and Long Island regions in the second post-law survey caused the statewide rate to drop below 50 percent.

The pattern of change in New York State's usage rates has been similar to that of other jurisdictions with mandatory restraint use laws. Since New York was the first state in the nation to implement this legislation, its experience should continue to be monitored closely.

1. INTRODUCTION

BACKGROUND OF THE LAW

For many years New York State has been a leader in promoting the use of safety restraints as an important measure to improve highway safety. In the early 1960s, ahead of the 1966 federal mandate, New York required that all new automobiles sold in the State be equipped with safety belts.

In its 1982 report, a principal recommendation of the New York State Governor's Task Force on Alcohol and Highway Safety was the implementation of mandatory occupant restraint legislation. Mandated safety restraint use was recognized to be the most cost-effective means of protecting all vehicle occupants involved in traffic accidents.

In April 1982, New York State implemented one of the strictest child restraint laws in the nation. Since that time, restraint use has been required for all children under the age of five. Children under four years of age must be restrained in federally-approved child restraint devices. The law allows for the substitution of safety belts for children between the ages of four and five. In April 1984, New York State enacted legislation that extended mandatory restraint use to children up to the age of seven and provided for the extension of the requirement to all children under ten years of age by 1987.

New York State had also begun to extend mandatory use to other categories of vehicle occupants, beginning with new drivers. In March 1983, drivers with learner permits were required by the Commissioner of Motor Vehicles to use safety restraints. Early in the 1984 New York State Legislative session, a law was passed that required new drivers with probationary licenses to buckle up beginning in September 1984.

In the early summer of 1984, this incremental approach culminated in New York becoming the first state to pass a general mandatory occupant restraint law covering adults as well as children. Since December 1, 1984, all front seat occupants and children under the age of ten, regardless of seating position, have been required to use safety restraints. Occupants of trucks over 18,000 pounds, emergency vehicles, taxis, buses, and vehicles which pre-date the safety belt installation requirement are exempted. After a one-month warning period, full enforcement of the law began. Since January 1, 1985, fines of up to fifty dollars have been imposed for violations of the law.

EVALUATION OF THE LAW

Both federal and state officials recognized the importance of a comprehensive evaluation of the effectiveness of the nation's first Mandatory Occupant Restraint Law. The Institute for Traffic Safety Management and Research, in cooperation with the National Highway Traffic Safety Administration and the New York State Governor's Traffic Safety Committee, developed a four-part evaluation plan that would assess the effects of the law on:

- 1) safety restraint use by front seat occupants and children under ten years of age;
- 2) attitudes, behaviors and perceptions of licensed drivers;
- 3) fatalities and injuries to occupants of vehicles involved in traffic accidents;
- 4) enforcement and convictions for violations.

OBSERVATIONAL SURVEYS OF FRONT SEAT OCCUPANTS

This is the final report on a series of observational surveys of restraint use by front seat occupants. In order to measure the effects of the law on usage rates, statewide observational surveys of restraint use were conducted at three points in time. The baseline survey was conducted in October 1984. The survey was repeated twice to measure the effect of the law on usage rates and to monitor changes in usage over time. The first statewide post-law survey was conducted in March 1985 and the second was conducted in September 1985. In addition to these three statewide surveys, a smaller observational survey was conducted in four selected areas in January 1985. This survey provided measures of restraint use immediately after full implementation of the law.

In all three statewide surveys the major effort focused on daytime observations of drivers and front seat passengers in either moving traffic or stopped at intersections. Additional observations were scheduled at selected sites during evening hours to determine usage rates after dark and differences between daytime and nighttime usage rates.

This report presents the safety restraint usage rates for the three statewide surveys, and for the smaller January 1985 survey. Usage rates were further analyzed by day of the week, time of day, and region.

Chapter 2 describes the sampling methodologies and procedures used for the surveys of front seat occupants and also for the nighttime observation surveys. Chapter 3 presents the results of the daytime restraint use surveys on both a statewide and a regional basis, as well as changes over time. Chapter 4 discusses nighttime usage rates across the three surveys, again for the State as a whole and by region. The final chapter summarizes the findings and discusses the overall effects of the law on restraint use in New York State.

2. SURVEY METHODOLOGY

SITE SELECTION

The sampling design for the statewide surveys of drivers and front seat passengers was developed by Westat, Inc. of Rockville, Maryland under a separate contract with the U.S. Department of Transportation's National Highway Traffic Safety Administration. Prior to the first survey, sites were selected and scheduled for observation according to the methodology described below.

As Figure 2.1 indicates, the first step in the sampling process was the selection of large areas of land, either Standard Metropolitan Statistical Areas (SMSAs) or non-SMSA counties. All twelve SMSAs in New York State were included in the sampling plan (Table 2.1). The twenty-eight non-SMSA counties were stratified into four groups with seven counties each. With each county having an equal probability of being selected, one county was drawn from each group. The four non-SMSA counties selected were Allegany, Cayuga, Greene and St. Lawrence.

The second step was the identification of the roads within each of the twelve SMSAs and four non-SMSA¹ counties that had the highest volume of traffic. A sample of these roads was selected. In many cases the high volume roads were selected more than once for observation at different dates and times.

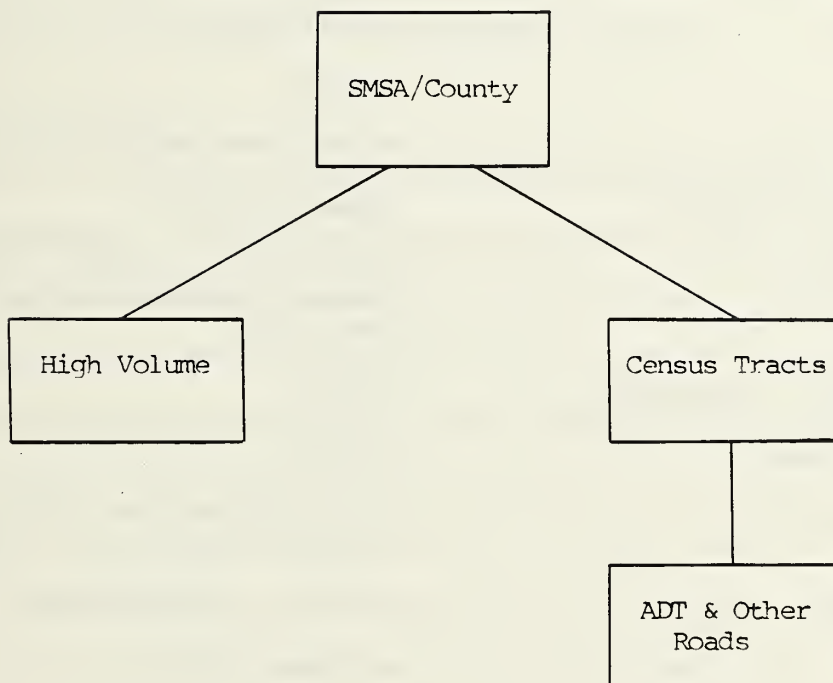
It was not feasible to list and sample from all of the remaining roads in each SMSA and selected county because of the large number. Instead, a¹ sample of Census tracts was systematically drawn from each SMSA or county. The entire road system within each selected Census tract was then

1

A Census tract is a segment of land which normally contains between 2,000 and 10,000 residents.

Figure 2.1

SAMPLE DESIGN SUMMARY



Source: Design of the New York State Seat Belt Usage Survey: Final Report (Westat, November 1984) p.1-5.

TABLE 2.1

AREAS OF NEW YORK STATE INCLUDED IN SAMPLING PLAN

<u>SMSA</u>	<u>Counties comprising the SMSA</u>
Albany - Schenectady - Troy	Albany, Montgomery, Rensselaer, Saratoga, Schenectady
Binghamton	Broome, Tioga
Buffalo	Erie, Niagara
Elmira	Chemung
Glens Falls	Warren, Washington
Nassau - Suffolk	Nassau, Suffolk
New York	Bronx, Kings, New York, Putnam, Queens, Richmond, Rockland, Westchester
Newburgh - Middletown	Orange
Poughkeepsie	Dutchess
Rochester	Livingston, Monroe, Ontario, Orleans, Wayne
Syracuse	Madison, Onondaga, Oswego
Utica - Rome	Herkimer, Oneida

Non-SMSA Counties

Allegany
Cayuga
Greene
St. Lawrence

Source: Design of the New York State Seat Belt Usage Survey:
Final Report (Westat, November 1984) p.2-7.

listed, excluding any high volume roads. The roads for which there was a record of a traffic count were classified as ADT (Average Daily Travel) roads. The remaining roads were simply classified as "other" roads. A sample of ADT and other roads was then selected for each SMSA or county. As with the high volume roads, an ADT or other road could be selected more than once. Annual gasoline sales were used to determine the allocation of observation hours among the SMSAs and non-SMSA counties.

SCHEDULING OF SITES

Dates and times for conducting observations at the sampled locations were then assigned. Observation periods were one hour long. Each day was divided into six one-hour time periods: 8:00-9:00 a.m., 9:30-10:30 a.m., 11:00-12:00 noon, 1:00-2:00 p.m., 2:30-3:30 p.m., and 4:00-5:00 p.m. One-half hour between observation periods was allotted for travelling between sites. A two and one-half hour break between the morning and afternoon assignments allowed time for lunch and also extra time for travel if needed. For example, if the 11:00-12:00 noon slot was scheduled for observation, the 1:00-2:00 p.m. slot would be left open.

Observations were randomly scheduled across all days of the week. To minimize the amount of travel between sites, roads in close proximity were randomly assigned to the same morning or afternoon whenever possible.

The baseline survey was conducted from October 3, 1984 to October 30, 1984. In general, the same sites were revisited in the first statewide post-law survey which was conducted from April 11, 1985 to May 8, 1985, and

in the second statewide post-law survey which was conducted from September 11, 1985 to October 8, 1985.¹ The original day-of-week and time-of-day schedules were also replicated as closely as possible.

The direction of traffic and the lane to be observed at each site were randomly selected by the observers who conducted the baseline survey. This information was recorded on site description forms for use in later surveys. The forms and schedules that were used to locate the correct sites are found in Appendix A.

DATA COLLECTION PROCEDURES

For each survey, a staff of observers was hired to conduct five hours of observation a day, six days a week, for a four-week period. Two-day training sessions were held immediately before the start of each statewide survey. The training included both classroom instruction and practice in the field. The training materials used also appear in Appendix A.

The observers were instructed to record information on all of the appropriate vehicles which passed the selected site and were travelling in the specified direction and lane.² The type of data collected was dependent upon whether or not the traffic came to a stop.

1

A small number of sites were found to be inappropriate during the baseline survey and substitutes were selected. In addition, some sites were rescheduled when it was discovered in the baseline survey that not enough travel time had been allowed between certain sites.

2

In a few instances it was not possible to observe every car because of the volume and speed of traffic. The observers were instructed to determine a pattern for observation, such as every other car or every third car. This pattern was followed for the entire hour and the ratio of cars observed to total traffic was noted on the data collection form.

Separate data collection forms were provided for the two types of sites referred to as "stopped" and "moving". Copies of these forms are included in Appendix A. Stopped sites were those controlled by a traffic light or stop sign. At these sites observers recorded whether drivers of vehicles stopped at the intersection were unrestrained, wearing lap belts, or wearing shoulder/lap restraints. The same information was recorded for any front seat passenger sitting in the outside position. Cars passing the observers while the light was green (referred to as "unobserved cars") were counted, but no information on restraint use was collected.

Sites where traffic did not come to a stop were called moving sites. Only shoulder belt use was observed at these sites. The observers held a small counter in each hand. One was used to count the number of front seat occupants using shoulder belts and the other to count the number not using shoulder belts. These totals were transferred from the counters to a data collection form at the end of the observation hour.

DATA WEIGHTING PROCEDURES

The data collected by the observers were weighted to adjust the estimates of safety belt use for certain biases introduced by the sample design and by the differences in types of data collected in stopped and moving traffic. Adjustments were made for the traffic volume using the number of lanes for each road and the number of unobserved cars at stopped sites. Based on observations at stopped sites, adjustments were also made for lap belt usage missed in moving traffic. Finally, adjustments were made to account for observations which were scheduled but missed. A discussion of the formulas used in estimating usage, as well as a complete description of the methodology, can be found in Design of the New York State Seat Belt Usage Survey: Final Report by J. Michael Brick and John Edmonds, Westat, Inc., November 1984.

DATA ANALYSIS

The two statistical packages used to analyze the data were SAS (Statistical Analysis System) and SPSSX (Statistical Package for the Social Sciences). SAS was used to weigh the data and generate statewide and regional usage rate estimates as well as rates based on the day of the week and the time of day. SAS also provided standard errors, coefficients of variations, and confidence intervals for the usage rate estimates. SPSSX was used in the analysis of the night survey usage data. Where appropriate, tests of significance using the Z statistic were conducted on the differences in usage rates found in the surveys.

Given the sampling design, it was not possible to provide a valid and statistically sound estimate of usage for each individual SMSA or non-SMSA county. The primary reason was that the number of sites selected in some of the SMSAs was too small for analysis. However, the SMSA and non-SMSA counties could be grouped into regions and usage rate estimates could then be provided on a regional basis. The following three regions were examined.

- 1) New York City - comprised of the New York City SMSA
- 2) Long Island - comprised of the Nassau-Suffolk SMSA
- 3) Upstate - comprised of the remaining ten SMSAs and the four non-SMSA counties.

Day-of-the-week analyses compared weekdays (Monday-Friday) to weekend days (Saturday-Sunday) on a statewide and regional basis. The time-of-day analyses were limited to weekdays, comparing usage during rush hours (8:00-9:00 a.m. and 4:00-5:00 p.m.) to usage during other hours of the day (non-rush hours, 9:30 a.m. to 3:30 p.m.).

FEASIBILITY OF CONDUCTING OBSERVATIONS AT NIGHT

Most observational surveys have been limited to daylight hours because of the safety and visibility problems associated with conducting surveys after dark. It was of interest, however, to determine whether usage at night differed from that observed during the daylight hours and whether the mandatory safety restraint law had a different effect on those travelling after dark.

In October 1984, an exploratory survey of restraint use at night was conducted to test the feasibility of collecting restraint use data after dark. The night observation sites were selected from among the sites used in the larger daytime survey of front seat occupants.

SCHEDULING AND SELECTION OF SITES FOR NIGHTTIME OBSERVATION

Following the same procedures used in the October 1984 study, this survey of night usage was repeated in April 1985 and again in September 1985. Night observations were randomly assigned to the schedules of the observers conducting the daytime surveys of front seat occupants. Approximately ten percent of the observers' time was scheduled for night observations. Observation times were 7:00-8:00 p.m. and 8:30-9:30 p.m.

The sites used for the night observations were selected from among the sites visited in the daytime survey. The requirements that the night sites have adequate lighting and be reasonably safe for the observers precluded random selection. Since it was necessary to visit a site to determine if it was appropriate for night observation, the selection of the night sites was made by the observers. It was recommended that sites be chosen where traffic was controlled by a light or stop sign to allow more time for each observation. Only shoulder belt use was observed and the procedures for recording observations in moving traffic were followed.

LIMITATIONS OF NIGHT OBSERVATION SURVEYS

Some additional caveats should be mentioned. Because site selection was left to the individual observers, the sites observed at night in one survey differed from the sites observed in the other surveys. Since the sites were not randomly selected, the night usage rates reported may not be representative of the entire State or region. These rates do, however, provide an indication of how restraint use at night differed from restraint use during the day and how night restraint use changed over time.

In analyzing possible differences between day and night usage rates, the nighttime rates were compared to the daytime rates at the identical set of sites, not to the rates for the total sample of daytime sites.

3. SURVEYS OF RESTRAINT USE BY FRONT SEAT OCCUPANTS

INTRODUCTION

Three statewide surveys of safety restraint use by front seat occupants were conducted. The first statewide survey in October 1984 measured baseline usage rates. Statewide post-law surveys were conducted in April 1985 and September 1985. This chapter summarizes the findings of the three surveys and reports on the changes in safety restraint use statewide and within the Upstate, New York City and Long Island regions. Comparisons between weekday and weekend usage rates and between rush hour and non-rush hour usage rates were also made.

In addition to the three statewide observation surveys, a smaller survey was conducted in four selected areas in January 1985. The four Standard Metropolitan Statistical Areas surveyed were Albany, Buffalo, Nassau-Suffolk and Rochester. In all surveys, where appropriate, Z tests of significance were conducted.

STATEWIDE RESULTS

The statewide usage rates measured in the baseline survey and each of the post-law surveys appear in Table 3.1. The baseline usage rate measured for front seat occupants in October 1984 was 16 percent. In the first statewide post-law survey in April 1985, usage was 57 percent, an increase of 41 percentage points. However, in the second post-law survey, usage statewide had declined to 46 percent. Although this represented a significant decrease, the statewide usage rate was still nearly three times that observed prior to the law. More detailed statistics concerning the usage rates measured in each survey can be found in Appendix B.

When statewide usage rates were examined on weekdays and weekends and during rush hour and non-rush hour periods, the same patterns over time were noted. Between the baseline survey and the first post-law survey, there were large increases in both the weekday and weekend usage rates, as

well as in the rush hour and non-rush hour rates. These increases were followed by declines of ten to fourteen percentage points in the second post-law survey. In all three statewide surveys, usage in rush hour traffic was two to four percentage points higher than usage during other hours of the day. The relationship between usage on weekdays and weekends, however, varied in each survey.

TABLE 3.1

STATEWIDE USAGE RATES FOR
TOTAL, WEEKDAY/WEEKEND, RUSH/NON-RUSH

VARIABLES	Usage Rate (%)					
	Baseline Oct.1984 (1)	First Post-Law Apr.1985 (2)	Second Post-Law Sept.1985 (3)	Z ₁₂	Z ₁₃	Z ₂₃
<u>STATEWIDE</u>	15.88	57.14	45.96	+424.19*	+309.88*	-117.35*
<u>DAY OF WEEK</u>						
Weekdays	15.89	56.38	46.05	+355.29*	+267.04*	-94.97*
Weekends	15.84	59.40	45.65	+232.33*	+155.55*	-69.40*
<u>TIME OF DAY</u> ¹						
Rush Hour	17.16	58.04	47.63	+234.38*	+175.95*	-66.35*
Non-Rush Hour	15.01	54.88	44.55	+265.34*	+198.18*	-68.49*
¹ Rush/non-rush hour comparisons are based on weekday observations * Significant at .05 level						

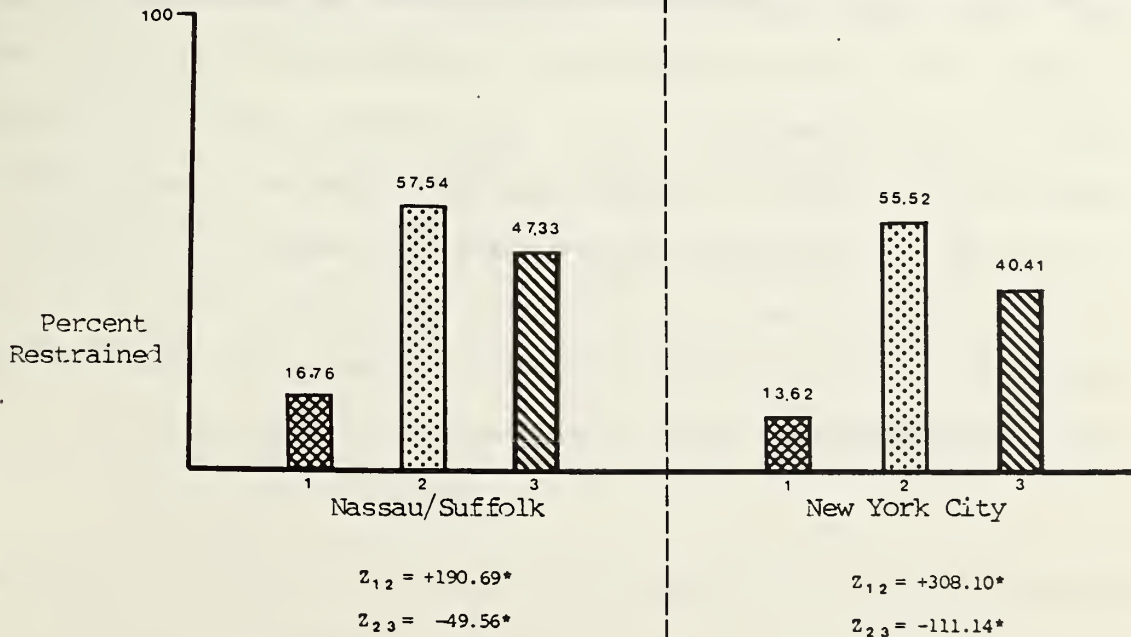
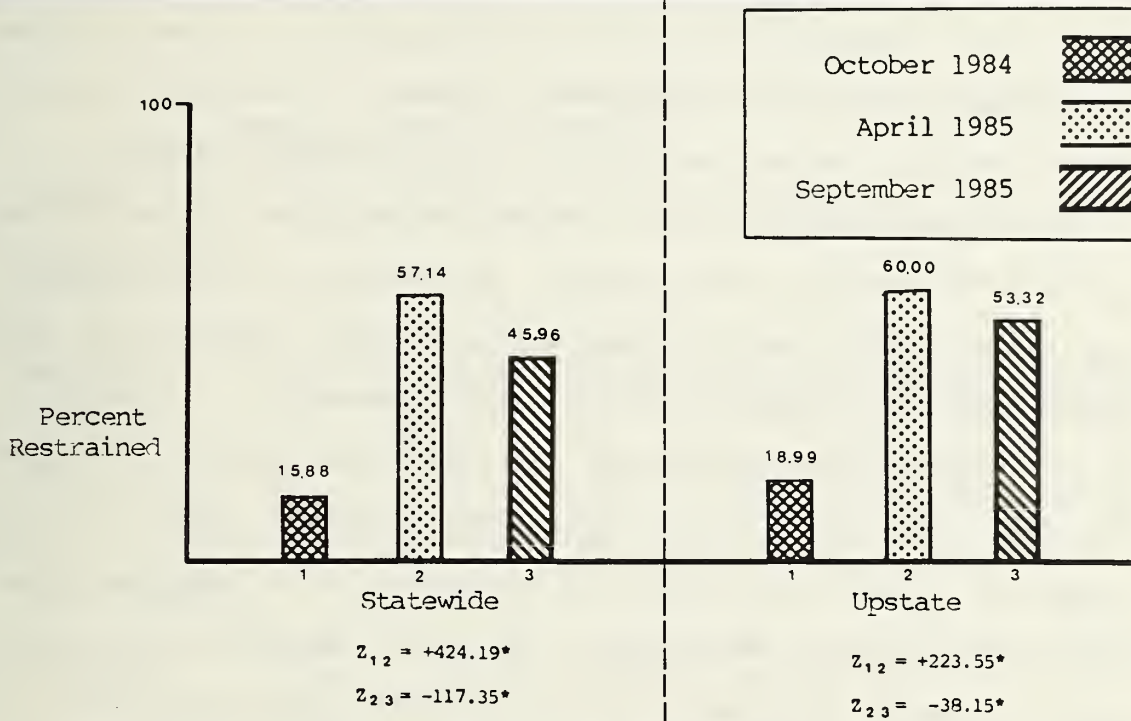
REGIONAL RESULTS

Usage rates among the three regions of the State (Upstate, New York City and Long Island) were also compared across the three points in time (Figure 3.1). In the October 1984 baseline survey, 19 percent of the front seat occupants observed Upstate were restrained, compared to 17 percent on Long Island and 14 percent in New York City. When the first statewide post-law survey was conducted in April 1985, large increases in usage of 41 to 42 percentage points were noted in all three regions. Again, usage Upstate was higher than that found in other regions (60% Upstate, compared to 58% on Long Island and 56% in New York City).

Subsequent decreases in restraint use were found in all three regions in the September 1985 post-law survey. The smallest decline occurred in the Upstate region where the usage rate dropped seven percentage points to 53 percent. The usage rate on Long Island was 47 percent, 11 percentage points lower than that measured in the first post-law survey. New York City experienced a 16 percentage-point drop in usage from 56 percent in April 1985 to 40 percent in September 1985.

Figure 3.1

CHANGES IN USAGE RATES STATEWIDE
AND IN THREE REGIONS



* Significant at .05 level

Regional comparisons were also made of usage rates over time on weekdays and weekends and during rush hour and non-rush hour traffic (Table 3.2). In all three regions, weekday, weekend, rush hour and non-rush hour usage rates conformed to the pattern of a large initial increase between the baseline survey and the first post-law survey, followed by a tapering off of safety belt use between the first and second post-law surveys.

In the first post-law survey, weekday use was higher than weekend use in the Upstate and Long Island regions. The opposite was true in New York City where weekday use was almost eight percentage points lower than weekend use (53% on weekdays compared to 61% on weekends).

In the second post-law survey, the large drop in weekend use in New York City (from 61% in April 1985 to 42% in September 1985) was most responsible for that region having the largest decline in usage over time. In the Upstate region, the September 1985 weekend usage rate was only five percentage points lower than the April 1985 weekend rate (53% compared to 58%). Long Island experienced similar weekend and weekday usage rate decreases of about ten percentage points (from 58% to 48% on weekdays, and from 56% to 46% on weekends). In all three regions, weekday and weekend usage rates were less than two percentage points apart in September 1985.

Finally, in both post-law surveys all three regions had consistently higher usage during rush hours than during other times of the day. More detailed statistics on the regional results from each of the three surveys are found in Appendix C.

TABLE 3.2

REGIONAL DIFFERENCES IN WEEKDAY/WEEKEND USE
AND RUSH HOUR/NON-RUSH HOUR USE

Usage Rate (%)						
REGION	Baseline Oct.1984 (1)	First Post-Law Apr.1985 (2)	Second Post-Law Sept.1985 (3)	Z ₁₂	Z ₁₃	Z ₂₃
<u>UPSTATE</u>						
Weekdays	19.47	60.45	53.40	+201.72*	+167.34*	-36.88*
Weekends	17.04	57.57	52.93	+94.75*	+85.29*	-10.63*
Rush Hour ¹	19.44	61.54	54.48	+142.34*	+118.36*	-25.85*
Non-rush Hour	19.49	59.41	52.38	+142.81*	+118.21*	-26.28*
<u>NEW YORK CITY</u>						
Weekdays	13.36	53.21	40.10	+247.48*	+170.38*	-83.62*
Weekends	14.23	61.16	41.50	+185.43*	+104.20*	-71.57*
Rush Hour ¹	15.68	55.15	41.40	+155.97*	+104.15*	-59.84*
Non-rush Hour	11.85	51.59	38.92	+190.69*	+133.28*	-59.11*
<u>LONG ISLAND</u>						
Weekdays	16.03	58.09	47.72	+160.08*	+121.21*	-42.76*
Weekends	18.06	56.14	46.30	+102.61*	+75.77*	-25.21*
Rush Hour ¹	16.09	59.53	50.35	+103.64*	+82.01*	-26.82*
Non-Rush Hour	15.99	56.74	44.98	+120.00*	+85.78*	-34.25*
¹ Rush/non-rush hour comparisons are based on weekday observations * Significant at .05 level						

RESULTS FOR SELECTED AREAS

Winter weather conditions in New York State made it necessary to postpone the first statewide post-law observation survey until April 1985. However, it was important to measure restraint use closer to the effective date of the law. Therefore, four of the Standard Metropolitan Statistical Areas (SMSAs) in the State were selected for a smaller month-long survey in January 1985. The four SMSAs chosen were Albany, Buffalo, Nassau-Suffolk, and Rochester.

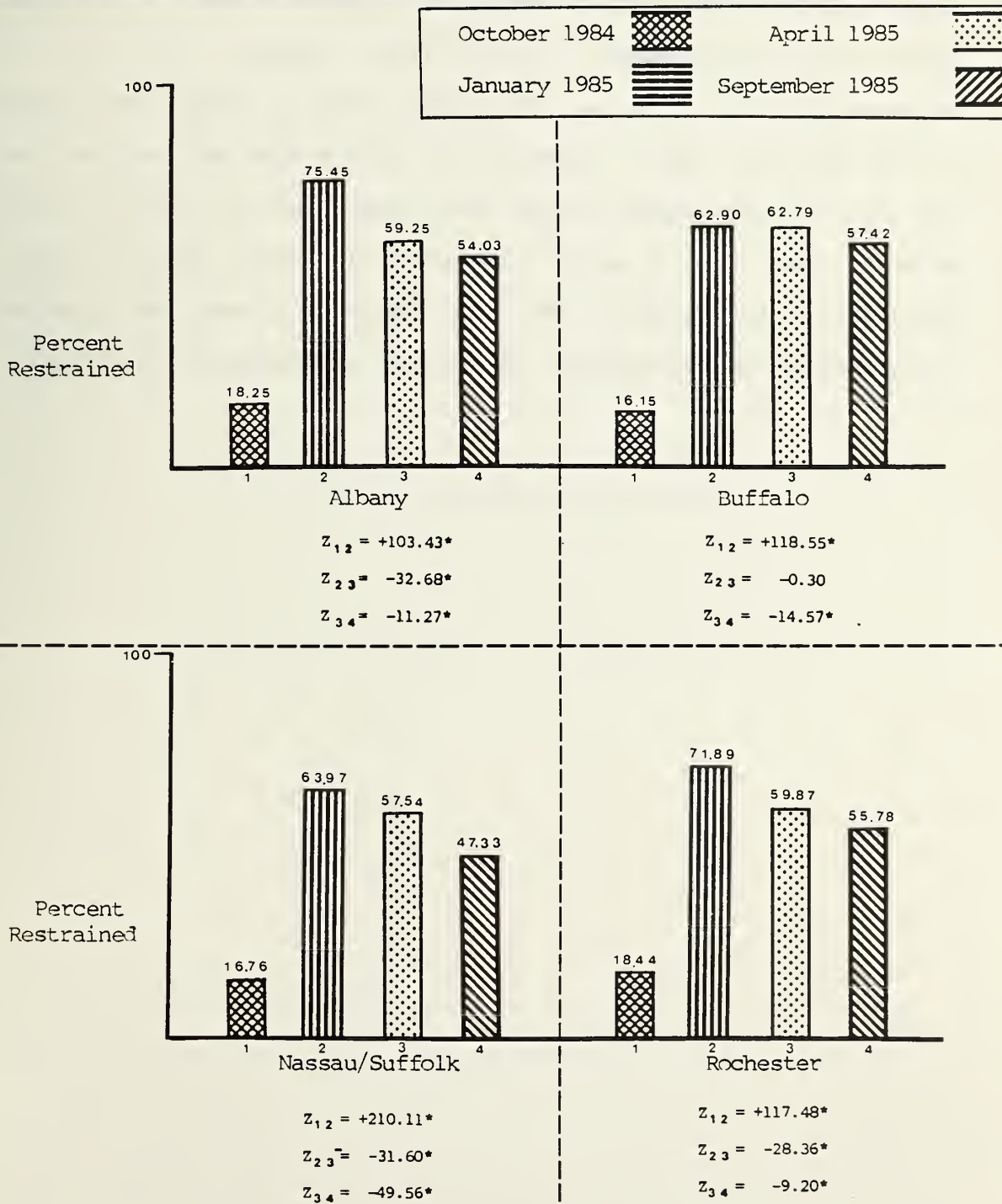
The sites and schedules used in these areas in January were the same as those used in the statewide surveys. As a result, the January 1985 usage rate estimates can be compared to the rates measured for the four areas in the three statewide surveys.

In January 1985, the usage rates in the four SMSAs ranged from 75 percent in Albany to 63 percent in Buffalo. With the exception of Buffalo, where no significant decline was noted between January 1985 and April 1985, restraint use was higher in January 1985 than at any other time (Figure 3.2). More detailed statistics from the surveys in these four areas can be found in Appendix D.

The usage rates within each of these four SMSAs conformed to the pattern found on the statewide and regional levels. After implementation of the law, each area experienced a large increase in usage which declined over time. Since the usage rate changes in these four areas were consistent with the rest of the State, it is likely that the statewide and regional usage rates in January 1985 were also higher than those measured in April 1985.

Figure 3.2

CHANGES IN USAGE RATES IN FOUR SELECTED AREAS



SUMMARY

The implementation of the Mandatory Occupant Restraint Law has had a substantial impact on safety restraint use in New York State. The highest usage rates were measured in the surveys conducted closest to the implementation date of the law. The initial levels of usage, however, were not sustained over time. Usage rates in the two downstate regions (New York City and Long Island) were primarily responsible for the drop in the statewide usage rate to below 50 percent in the second post-law survey. Nevertheless, in September 1985, New York State's usage rate remained nearly three times that measured prior to the implementation of the law.

4. SURVEYS OF RESTRAINT USE AT NIGHT

INTRODUCTION

In addition to the daytime surveys of front seat occupants, three statewide surveys of restraint use at night were conducted. The objective of the first night survey in October 1984 was to test the feasibility of using procedures similar to those followed in the daytime surveys to observe front seat occupants' restraint use after dark. The procedures used in the October 1984 survey were found to be feasible and baseline night usage rates were measured. Two post-law surveys of restraint use at night were also conducted in conjunction with the April 1985 and September 1985 statewide daytime surveys of front seat occupants. Night restraint use was not measured in January 1985 because of the likelihood of inclement weather.

This chapter summarizes the findings of the three surveys and reports on the changes in nighttime safety restraint use statewide, within the Upstate, New York City, and Long Island regions, and on weekday and weekend nights. Where appropriate, tests of significance were conducted. Finally, comparisons were made of the absolute percentage differences between day and night rates in each survey to determine if changes in night usage rates over time were similar to changes in usage rates during the day. Tables containing the complete results from the three individual surveys are found in Appendix E.

The limitations of this study of safety restraint use at night should be noted again. Since not all of the randomly selected sites from the daytime study were appropriate for observation after dark, the subsamples of night sites were not strictly representative of the entire sample and, therefore, of the State. In addition, because the individual observers selected the night observation sites for each survey, the three samples were not identical. Therefore, caution must be used when examining the

comparisons over time which are presented in this chapter. It should also be noted that the night and day usage rates calculated for this analysis were based on unweighted data. This resulted in slightly lower usage rates than those reported for the entire daytime sample in the previous chapter.

STATEWIDE AND REGIONAL RESULTS

Approximately 12 percent of the front seat occupants statewide were wearing safety belts in the October 1984 baseline survey of nighttime restraint use. Night usage increased to about 50 percent in the first¹ post-law survey conducted in April 1985 (Table 4.1). However, the night usage rate decreased to 40 percent in the September 1985 second post-law survey. When the decrease in the statewide rate was examined by region, the largest drop in usage was found in the New York City area. Nighttime usage in the New York City region dropped from 48 percent in the first post-law survey to 30 percent in the second post-law survey. Between the two post-law surveys, the Upstate usage rate decreased five percentage points (from 53% in April 1985 to 48% in September 1985) while the usage rate on Long Island declined four percentage points (from 47% in April 1985 to 43% in September 1985).

1

It should be noted that two of the sites in New York City had a reported weekend night usage rate of 72.6% (N=742) in April 1985. This was 51 percent higher than other sites in the region. When these two sites were included in the New York City subsample, the weekend night usage rate was significantly higher than that found when the two sites were excluded. Since the two sites appeared to have such a large effect on the overall usage rate for New York City, and fell far outside the distribution of usage rates in the other sites within the region, the decision was made to exclude them from the day-night comparisons included in this chapter. Table F.5 in Appendix F presents the April 1985 usage rates with the two sites included.

COMPARISONS OF WEEKDAY AND WEEKEND NIGHTS

In the October 1984 baseline survey, usage on weekend nights statewide was significantly lower than usage on weekday nights (10% compared to 13%). Although weekend night usage in both post-law surveys was lower than usage on weekday nights, the differences were not statistically significant.

After large initial increases in usage between the baseline survey and the first post-law survey, there were significant decreases in usage on both weekday nights and weekend nights between the two post-law surveys. Usage at night during the week decreased from 50 percent in April 1985 to 40 percent in September 1985. On weekend nights, usage decreased from 49 percent to 40 percent.

Comparisons over time of regional weekend and weekday night usage also appear in Table 4.1. With the exception of weekend nights on Long Island, weekend night and weekday night usage between the first and second post-law surveys decreased in each region. The largest decline in night usage rates occurred in New York City on weekdays where the rate dropped by 21 percentage points (from 47% in April 1985 to 26% in September 1985).

TABLE 4.1

NIGHT USAGE RATES STATEWIDE, BY REGION,
AND BY DAY OF WEEK

NIGHT USAGE RATE						
VARIABLES	Oct.1984 (1)	Apr.1985 (2)	Sept.1985 (3)	Z ₁₂	Z ₁₃	Z ₂₃
<u>STATEWIDE</u>	11.59	49.73	40.36	80.07*	63.52*	17.90*
<u>REGION</u>						
Upstate	14.47	52.63	47.65	45.08*	39.80*	6.06*
New York City	9.01	48.15	30.37	50.54*	31.71*	20.55*
Long Island	11.93	47.06	43.45	40.70*	36.85*	3.37*
<u>DAY OF WEEK¹</u>						
Weekday	12.69	50.17	40.47	60.98*	45.11*	13.28*
Weekend	10.10	48.79	40.26	51.03*	44.87*	10.17*
<u>REGION BY DAY OF WEEK</u>						
<u>Upstate</u>						
Weekday	14.89	52.48	48.64	37.88*	34.27*	3.92*
Weekend	13.32	53.02	45.33	24.46*	20.41*	5.05*
<u>New York City</u>						
Weekday	10.76	47.14	26.09	34.60*	15.84*	18.01*
Weekend	7.37	50.95	33.61	36.13*	27.99*	12.00*
<u>Long Island</u>						
Weekday	11.95	50.69	39.76	32.56*	20.87*	6.20*
Weekend	11.90	42.44	44.90	24.45*	28.05*	1.71
¹ Weekday night = Monday-Thursday Weekend night = Friday-Sunday * Significant at .05 level						

COMPARISON OF DAY AND NIGHT USAGE RATES

Additional analyses were conducted to examine the differences between day and night usage rates and determine if the relationship between these rates changed over time. Table 4.2 shows the percentage differences between the night usage rates and those during the day at the same sites in each of the three surveys.¹ Tables containing more detailed results from each of the three individual surveys are found in Appendix F.

For each survey, the percentage differences in the statewide, regional, weekday and weekend day and night usage rates were compared. In general, restraint use during the day was higher than at night. On a statewide basis, the difference between day and night usage rates decreased over time. There was a two percentage-point difference in day and night usage in both the baseline survey and in the first post-law survey, and a one percentage-point difference in the second post-law survey.

Within the three regions, the differences in day and night use in each survey varied by one to five percentage points. The differences between night and day rates on both weekends and weekdays were less than four percentage points in each survey.

1

It should be noted that one of the sites on Long Island had a reported weekday usage rate of 49.3 percent (N=1840) in October 1984. This was 370 percent higher than other sites in the region. When this site was included in the Long Island subsample, the weekday usage rate was significantly higher than that found when the site was excluded. Since the site appeared to have such a large effect on the overall usage rate for Long Island, and fell far outside the distribution of usage rates in the other sites within the region, the decision was made to exclude it from the day-night comparisons included in this chapter. Table F.4 in Appendix F presents the October 1984 usage rates with the site included.

TABLE 4.2

DIFFERENCES IN DAY AND NIGHT USAGE RATES AT SELECTED SITES:
STATEWIDE, BY REGION, AND BY DAY OF WEEK

VARIABLES	DIFFERENCE BETWEEN NIGHT AND DAY RESTRAINT USE ¹		
	Oct.1984 (1)	Apr.1985 (2)	Sept.1985 (3)
STATEWIDE	1.72	2.39	0.93
REGION			
Upstate	1.88	3.23	4.93
New York City	2.65	0.72	3.94
Long Island	2.15	4.78	-1.94
DAY OF WEEK ²			
Weekday	0.45	3.09	1.34
Weekend	3.69	0.88	-1.07
¹ Absolute percent differences between night and day usage were calculated by subtracting night usage rates from the day usage rates. Therefore, a positive difference indicates that the day rate was higher than the night rate and a negative difference indicates that the night rate was higher than the day rate.			
² Weekend day = Saturday and Sunday Weekend night = Friday, Saturday and Sunday			

SUMMARY

Safety restraint use at night followed the same pattern as the daytime use reported in the previous chapter. In the first post-law survey, there were large increases in nighttime usage rates statewide, within each region, and on both weekends and weekdays. Overall, usage rates dropped in the second post-law survey.

When the decrease in the statewide rate was examined by region, the largest drop in usage was found in New York City. In the two surveys after implementation of the law, there were no significant differences between the statewide usage rates on weekday and weekend nights.

Finally, daytime usage rates were generally higher than nighttime rates at the same sites. However, the differences between day and night usage rates statewide, within each region, and on weekdays and weekends were five percentage points or less in all three surveys.

5. DISCUSSION

Two major findings emerge from the series of observational surveys of safety restraint use which were conducted in New York State between October 1984 and September 1985. First, with the implementation of the Mandatory Occupant Restraint Law there was a substantial increase in safety restraint use in New York State. Second, the dramatic increase in usage which occurred immediately after the law took effect was not sustained over time.

In October 1984, prior to implementation of the law, the statewide usage rate was 16 percent. Usage increased to 57 percent in the first statewide post-law survey conducted in April 1985. A smaller survey conducted in four selected areas in January 1985 indicated that restraint use was even higher in the initial weeks following the implementation of the law. At this time, usage rates ranged from 63 to 75 percent in the four areas of the State.

In the final post-law survey conducted in September 1985, the statewide usage rate declined to 46 percent. If, as appears to be the case, the findings from the selected areas in the January survey were indicative of the range of usage rates statewide, the usage rate measured in April 1985 reflected the beginning of a downward trend that continued through September 1985.

To determine if there were any notable shifts in the pattern of safety belt use over time, the results of the three statewide surveys were examined by day of week, time of day, and region. The relationship between the weekday and weekend usage rates in each survey was inconsistent while usage during rush hours was consistently higher than during other hours of the day. However, in all three surveys, the differences between weekdays and weekends and between rush hours and non-rush hours were generally less than five percentage points. This was also the case when daytime and

nighttime usage rates were compared in each survey. Thus, the day of week and time of day did not appear to be important factors in explaining the decline in usage.

More pronounced variations were found among the regions of the State. In each survey, the usage rate was highest in the Upstate region and lowest in New York City. In the October 1984 baseline survey, usage rates ranged from 19 percent in the Upstate region to 14 percent in New York City. This small difference of five percentage points was sustained in the April survey, when all three regions experienced nearly identical increases of 41 to 42 percentage points. However, when usage rates dropped in the second post-law survey, the difference among the regional rates widened substantially. The decline in usage from the first post-law survey to the second post-law survey was 15 percentage points in New York City, ten percentage points on Long Island, and seven percentage points Upstate. Thus, the decreases in New York City and on Long Island contributed the most to the overall decline in the statewide rate.

While the implementation of the Mandatory Occupant Restraint Law has achieved much higher levels of restraint use than any past efforts to increase usage on a voluntary basis, it is clear that the existence of a law is not sufficient to sustain usage rates at consistently high levels. New York State's experience in the first year was similar to that of other jurisdictions with mandatory restraint use laws. That is, the initial high rates of compliance declined as publicity decreased and the public perceived that the law was not being strictly enforced.

Despite declining usage rates, support for the law has not decreased over time. Telephone interviews with New York State drivers during the same period as the observational surveys indicated that most drivers were in favor of the law. By September 1985, statewide support for the law had increased from 64 percent to 71 percent. However, the number of drivers¹ perceiving that the law was strictly enforced steadily declined over time.

In summary, the results of the observational surveys provide evidence of the positive effects of the Mandatory Occupant Restraint Law on safety restraint use in New York State. However, studies of safety restraint use alone are not enough to establish the ultimate effectiveness of the law. Usage rates must be examined in conjunction with changes in casualty rates to determine whether the Mandatory Occupant Restraint Law has achieved the goal of reducing traffic fatalities and injuries. A future study will analyze motor vehicle accident data to determine the effects of the law on injury and fatality rates in 1985. Since New York was the first state in the nation to implement this legislation, its experience should continue to be monitored closely in the coming years.

1

Debra H. Rood and Patricia P. Kraichy, Evaluation of New York State's Mandatory Occupant Restraint Law: Attitudinal Surveys of Licensed Drivers in New York State. Final Report (Institute for Traffic Safety Management and Research, December 1985).

APPENDIX A

SITE LISTING

ROAD TYPE
AND TRACT

SMSA - Binghamton, Code 02

<u>HIGH VOLUME</u>	<u>SAMPLED LOCATION</u>	<u>SITE #</u>
HV	Route 17 - exit 70 westbound Route 17C	02101
HV	Route 17 at Front Street	02102
HV	Route 17 (east) east of Binghamton entrance to I81 (north)	02103
HV	Route 17C at Davis Avenue	02104
HV	I81 (north) at exit to Route 17 east of Binghamton	02105
HV	I81 exit 6S to Route 11	02106
HV	Route 434 (Vestal Pkwy. east) eastbound from Route 26	02107
HV	Route 434 (west) - west from Pennsylvania Ave.	02108
 <u>ADT</u>		
3	Hwy. 11 (Front St.) at Winding Way/McDonald	02301
19.01	I81 -Exit 8 to Hwy. 11, southbound	02302
19.01	Hwy. 206 at Hickory St./Hwy. 79	02303
19.01	Hwy. 79 at E. Main/Hwy. 206 southbound	02304
19.01	Catskill Turnpike (Hwy. 11/Hwy. 79) at Fairgrounds entrance	02305
19.01	Hwy. 26/North Hickory - at north end of Prospect St.	02306
33.02	Day Hollow Road at Broome/Tioga County Line	02307
33.02	Hwy. 26 - at Elsie Drive	02308
 <u>OTHER</u>		
3	Clifton Ave. (in Ely Park Municipal Golf Course) at Conti Court	02501
3	Karlada Drive at Prospect Street	02502
19.01	Hill Road at Julian	02503
19.01	Brewer Road at North Street	02504
19.01	119th Street at Main Street	02505

OBSERVATION STUDY
FALL 1985

Night:
7 PM,
8:30 PM

KEY

8 AM	1 PM
9:30 AM	2:30 PM
11 AM	4 PM

Area: Binghamton (02), Elmira (04), Allegany (13)

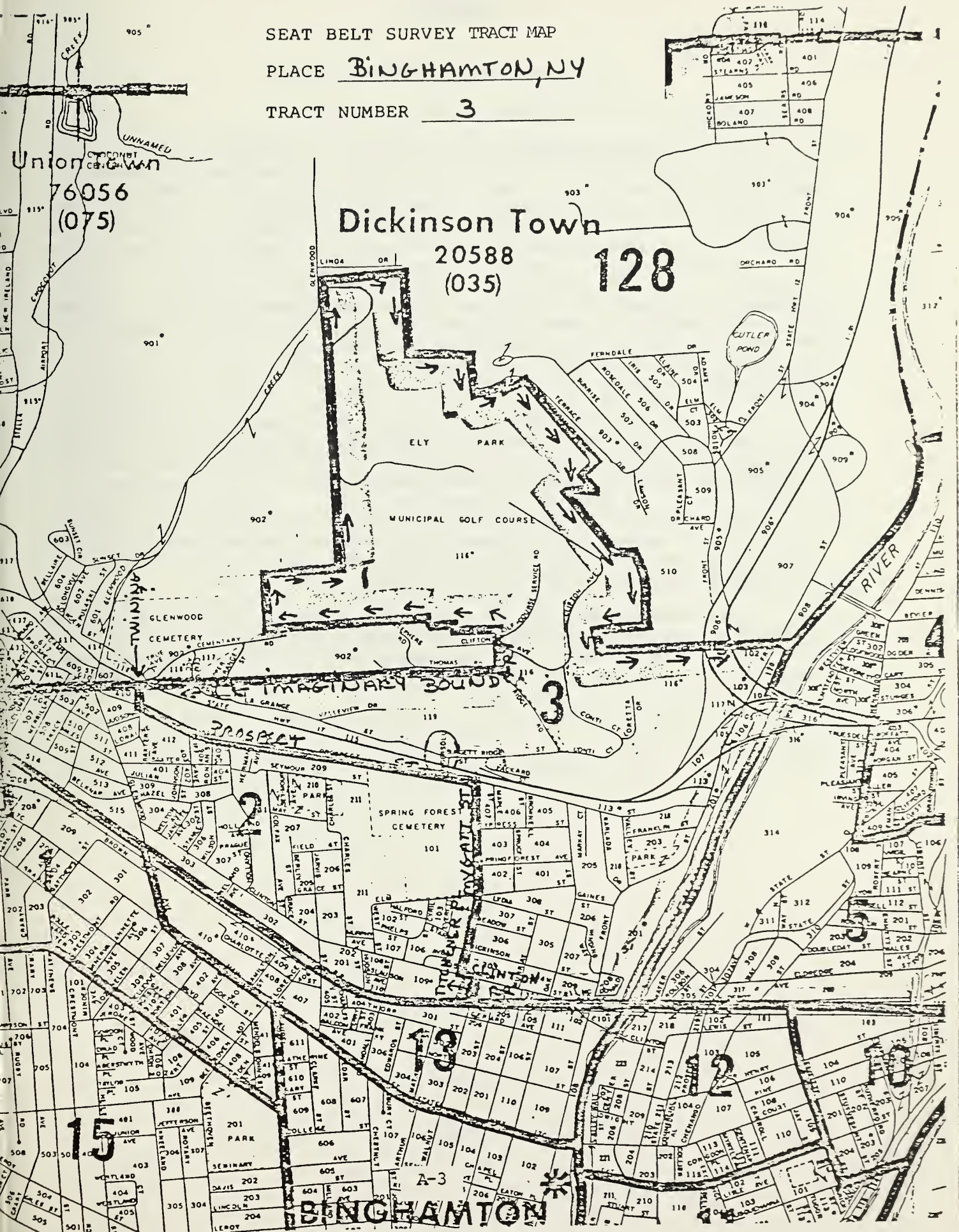
Observer: _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Sept. 9	10	Binghamton (02) 1	12	13	14
-----	observer Training	observer Training	503 302 504	301 - - 102	- 108 506 507	OFF
15 308	* 107	17 303	18 Travel	19 Elmira (04) 501	20 503	21
307	104	304		502	301	OFF
-	106	-		104	504	
22	101	Allegany (13) 24 505	25 107	26 501	27 511	28
OFF	102	504	317	502	311	OFF
	105	104	515	-	512	
29	307	Oct. 1 506	* 2 103	3 509	4 313	5
OFF	308	101	104	510	315	OFF
	508	102	105	106	314	
6	101	318				
OFF	102	319				
	-	518				
		519				

SEAT BELT SURVEY TRACT MAP

PLACE BINGHAMTON, NY

TRACT NUMBER 3



APPENDIX A

SITE ASSIGNMENTS AND SCHEDULES

Site Listing

You will be provided with a list of locations in your area of the State which have been randomly selected as observation sites for the surveys. Each site in the State has been assigned a unique five-digit number. The first two digits identify the county or area of the State. The last three identify the specific site within that county or area. There are three types of roadways which appear in the list of locations. Those numbered 1-- are generally considered "high volume." Those numbered 3-- and 5-- will generally have less traffic. These last two categories of roads are further identified by the number of the Census Tract in which they are located.

Schedule

Each of the observation sites has been randomly assigned to a specific date and time within the four weeks of the survey. There are six observation times each day. You will be scheduled to conduct observations at a maximum of five sites each day.

On a limited number of days you will be scheduled to conduct observations after dark. These days are marked with an * on your schedule. On those days you will conduct observations during two nighttime periods: 7:00-8:00 p.m. and 8:30-9:30 p.m.

You will be participating in the third in a series of three statewide surveys conducted at the same sites and according to the same schedules. The schedule provided must be followed exactly so that the results of the three surveys can be compared.

APPENDIX A

FINDING YOUR OBSERVATION SITE

Four types of guides are provided to help you find your assigned observation site.

- 1) A listing of sites in your area
- 2) Census Tract maps, SMSA maps
- 3) City or county road and street maps
- 4) Site descriptions

Your listing of sites will provide the location of each site number on your schedule. If the site number begins with a "3" or a "5" a census tract number will be listed. These sites can be located using the census tract maps and the larger SMSA maps. For site numbers beginning with "1" (high volume roads), city or county street and road maps, if available, may be more helpful.

A Site Description Form has been filled out for each of your assigned sites. These forms will provide information that should be helpful in choosing the correct place to stand once the site has been found. The Site Description Form will also tell you ahead of time if an intersection is controlled by a traffic light or stop sign, and the number of lanes one-way.

It may be possible that the road has changed since it was last observed. For example, a road may have been widened or a traffic light added. Please let the Institute know if you had to observe traffic from a different spot than the one indicated on the Site Description Form, and note any changes on the Site Description Form.

Always observe traffic on the road mentioned first on the list of sites. (For example, if the site is described as I-87 at Rt. 146, the traffic on I-87 should be observed.) DO NOT observe traffic on the street listed second, even if it has more traffic.

APPENDIX A

SUPERVISION AND SUPPORT

There will be one supervisor assigned for every four observers. The supervisor will be visiting the observers they are responsible for primarily on an unannounced basis. They will make sure that procedures are being followed correctly and that observers are following their schedules. Their function is also to provide support to observers.

At the training each observer will be told who their supervisor is and how to reach them during the four weeks of the survey. The supervisor is the person who should be contacted about any problems in completing the observations as scheduled. It is expected that observers will complete all their assignments. In the event that an observer becomes ill or an emergency comes up, the supervisor should be notified immediately so that he or she can try to cover the missed observation times. Because of the distances involved this will not be possible unless the supervisor is notified sufficiently ahead of time.

Because the design used for this study requires that the sites selected be observed on the day of the week at the time of day scheduled, rescheduling of observation times is not possible. It is extremely important and the responsibility of the observer to complete the assignments as scheduled. Make every effort to notify the supervisor far enough in advance so that substitute coverage can be provided.

Members of the Institute staff can be reached Monday-Friday, 9:00 a.m. to 5:00 p.m. at (518) ----- . Call collect and ask for Patricia Kraichy, Jean Carubia or Debra Rood. . In an emergency, contact your supervisor at the number he will give you.

APPENDIX A

CONDUCTING NIGHT OBSERVATIONS

In order to determine if seat belt use varies at different times of the day, 10% of your observations will be during evening hours. The nights selected are indicated by an asterisk (*) on your schedule. On those days you will do three daytime and two nighttime hours of observation. The night observation hours are 7-00-8:00 p.m. and 8:30-9:30 p.m. All night observations will be recorded using the counters. Totals at the end of each hour will be recorded on the Moving Traffic Recording Sheet for that day.

It will be more difficult to observe belt use at night. It is also important to maintain safety for the observer. For these reasons observers will select sites which are suitable for night observation from among their assigned day observation sites. The next page lists sites which were previously observed at night.

Observers will look for an area that:

- has a controlled intersection or slower moving traffic,
- is well lit,
- is well travelled (near a late-night supermarket, movie theatre, gas station, for example),
- has a convenient spot to observe seat belt use.

Observers should wear light-colored clothing, and carry all identification provided.

Do not remain at a location if you feel it is unsafe. If necessary, move to a safer location or stop observation. Report any problems in completing night observations to the Institute when reporting in. Some observers have brought a friend to night observations so they do not have to be alone. Even though you may be at a controlled intersection, do not attempt to count drivers and passengers on the stopped form. Use hand counters to count front-seat occupants.

APPENDIX A

REPORTING PROCEDURES

To aid in compiling data as quickly as possible, observers will call the Institute collect at (518) ----- to report their results, in addition to mailing in their data recording sheets. Data recording sheets should be mailed in at the end of each day after reporting data by phone. DO NOT mail in sheets to the Institute without calling in the data first. Data should be called in Monday evening, between 5:30 and 8:30 p.m. and Tuesday-Thursday between 5:30 and 8:00 p.m. Data collected Friday, Saturday or Sunday will be called in on Monday evening. If night observations are scheduled and you cannot call on a particular night, you are expected to call the next night.

Because all the observers will be calling in their results, calls during the scheduled evening hours should only be used for reporting data. If you have a problem, try to resolve it through your assigned supervisor. If any sites have been missed, complete the top of the form and indicate why the site was missed. Report that the site was missed when calling in at night and then mail the form in with the other completed forms.

The following sample recording sheets indicate the order of items to report when calling in. Report moving sites first, then stopped sites.

APPENDIX A

SITE DESCRIPTION FORM

Site Number: 02104 HV

City: Binghamton

Type Road. High X ADT Other

Streets: Route 17c at Davis Ave.

Traffic Light/Stop Sign: Yes No X

For Traffic Light/Stop Sign Intersection Only:

High Intensity Night Lights: Yes No

Appears Safe for Observers at Night: Yes No

Direction of Traffic: EAST

Number of Lanes One-way: 2

Description of Best Observation Spot: 30 Ft. East of DAVIS
Next to telephone pole.

Is Site Suitable for Observation? Yes ✓ No

If No You Must Give Reasons:

APPENDIX A

INSTITUTE FOR TRAFFIC SAFETY MANAGEMENT AND RESEARCH SEAT BELT OBSERVATION STUDY STOPPED TRAFFIC RECORDING SHEET (518) 473-0327

Observer: _____ (5-6) Street Name: _____
 Date: _____ (7-10) Intersecting Street: _____
 Observation Site No.: _____ (11-15) Direction of Traffic: _____
 Tract No: _____ (16-21) Observation Location: _____
 _____ am Lane Observed: _____
 Time Began: _____ pm (22)
 _____ (circle) Number of Lanes: _____ (53)
 Weather: _____ (54)
 _____ (55)
 _____ (56)

CODING 0 = No belts on
 1 = Lap Belt only
 2 = Shoulder (and Lap Belt)

CAR #	DRIVER	FRONT SEAT PASSENGER
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

CAR #	DRIVER	FRONT SEAT PASSENGER
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		

APPENDIX A

CAR #	DRIVER	FRONT SEAT PASSENGER
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		

CAR #	DRIVER	FRONT SEAT PASSENGER
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		

	DRIVER	FRONT SEAT PASSENGER	Site # _____
0	(23-25)	(32-34)	(41-43)
1	(26-28)	(35-37)	(44-46)
2	(29-31)	(38-40)	(47-49)

APPENDIX A

INSTITUTE FOR TRAFFIC SAFETY MANAGEMENT AND RESEARCH SEAT BELT OBSERVATION STUDY MOVING TRAFFIC RECORDING SHEET (518) 473-0327

Observer: _____ (5-6)

Date (7-10)	Site No. (11-15)	Tract (16-21)	Time Began (22) Include am or pm	Number Observed Not Using Shoulder Belts (41-43) NO	Number Observed Using Shoulder Belts (47-49) YES
1 / _____	1 _____				
	2 _____				
	3 _____				
	4 _____				
	5 _____				

Site No.	Street Names	Weather (54)	Lane Observed and Traffic Direction	Total no. of Lanes one-way (53)	Was Every Car Observed?
1.					
2.					
3.					
4.					
5.					

____ (55)
3 (56)

TABLE B.1

OCTOBER 1984
STATEWIDE USAGE RATES FOR
TOTAL, WEEKDAY/WEEKEND, RUSH/NON-RUSH

VARIABLES	Usage Rate (%)	N ¹	Coefficient of Variation (%)	Standard Error (%)	95% Confidence Interval:		Z
					Lower	Higher	
<u>STATEWIDE</u>	15.88	431,725	3.77	0.5985	14.70	17.05	-
<hr/>							
<u>DAY OF WEEK</u>							
Weekdays	15.89	309,776	3.90	0.6197	14.68	17.11	0.48
Weekends	15.84	121,994	7.33	1.1610	13.56	18.11	
<hr/>							
<u>TIME OF DAY²</u>							
Rush Hour	17.16	127,732	4.41	0.7572	15.68	18.64	16.11*
Non-Rush Hour	15.01	182,049	4.45	0.6681	13.70	16.32	

¹N based on weighted data

²Rush/non-rush hour comparisons are based on weekday observations only

* Significant at .05 level

TABLE B.2

APRIL 1985
STATEWIDE USAGE RATES FOR
TOTAL, WEEKDAY/WEEKEND, RUSH/NON-RUSH

VARIABLES	Usage Rate (%)	N ¹	Coefficient of Variation (%)	Standard Error (%)	95% Confidence Interval:		Z
					Lower	Higher	
<u>STATEWIDE</u>	57.14	617,054	1.49	0.8516	55.47	58.81	-
<hr/>							
<u>DAY OF WEEK</u>							
Weekdays	56.38	461,200	1.41	0.7951	54.82	57.93	20.85*
Weekends	59.40	155,855	3.34	1.9825	55.51	63.29	
<hr/>							
<u>TIME OF DAY²</u>							
Rush Hour	58.04	217,785	1.40	0.8099	56.46	59.63	21.64*
Non-Rush Hour	54.88	243,415	1.98	1.0872	52.75	57.01	
<hr/>							
¹ N based on weighted data							
² Rush/non-rush hour comparisons are based on weekday observations only							
* Significant at .05 level							

TABLE B.3

SEPTEMBER 1985
STATEWIDE USAGE RATES FOR
TOTAL, WEEKDAY/WEEKEND, RUSH/NON-RUSH

VARIABLES	Usage Rate (%)	N ¹	Coefficient of Variation (%)	Standard Error (%)	95% Confidence Interval:		Z
					Lower	Higher	
<u>STATEWIDE</u>	45.96	495,831	1.31	0.6025	44.78	47.14	-
<hr/>							
<u>DAY OF WEEK</u>							
Weekdays	46.05	389,194	1.49	0.6863	44.70	47.39	2.32*
Weekends	45.65	106,636	2.39	1.0915	43.51	47.79	
<hr/>							
<u>TIME OF DAY</u> ²							
Rush Hour	47.63	188,801	1.80	0.8586	45.95	49.31	19.27*
Non-Rush Hour	44.55	200,394	1.58	0.7024	43.18	45.93	

¹N based on weighted data

²Rush/non-rush hour comparisons are based on weekday observations only

* Significant at .05 level

TABLE C.1

OCTOBER 1984
REGIONAL DIFFERENCES IN USAGE RATES FOR
TOTAL, WEEKDAY/WEEKEND, RUSH/NON-RUSH

REGION	Usage Rate (%)	N ¹	Coefficient of Variation (%)	Standard Error (%)	95% Confidence Interval:		Z
					Lower	Higher	
<u>UPSTATE</u>							
Total	18.99	128,952	3.84	0.7285	17.56	20.42	-
Weekdays	19.47	103,515	4.14	0.8058	17.89	21.05	8.83*
Weekends	17.04	25,436	8.98	1.5307	14.04	20.04	
Rush Hour ²	19.44	48,100	4.45	0.8641	17.75	21.13	0.20
Non-rush Hour	19.49	55,415	6.27	1.2215	17.10	21.89	
<hr/>							
<u>NEW YORK CITY</u>							
Total	13.62	213,205	6.13	0.8355	11.99	15.26	-
Weekdays	13.36	149,162	6.40	0.8557	11.69	15.04	5.33*
Weekends	14.23	64,042	9.71	1.3818	11.52	16.94	
Rush Hour ²	15.68	59,008	8.55	1.3403	13.05	18.30	21.26*
Non-rush Hour	11.85	90,154	4.90	0.5802	10.71	12.99	
<hr/>							
<u>LONG ISLAND</u>							
Total	16.76	89,568	7.46	1.2500	14.31	19.21	-
Weekdays	16.03	57,099	4.57	0.7323	14.59	17.46	7.83*
Weekends	18.06	32,466	15.23	2.7501	12.67	23.45	
Rush Hour ²	16.09	20,623	4.97	0.7998	14.52	17.66	0.31
Non-Rush Hour	15.99	36,480	5.97	0.9547	14.12	17.86	
<hr/>							
¹ N based on weighted data							
² Rush/non-rush comparisons are based on weekday observations only							
* Significant at .05 level							

TABLE C.2

APRIL 1985
REGIONAL DIFFERENCES IN USAGE RATES FOR
TOTAL, WEEKDAY/WEEKEND, RUSH/NON-RUSH

REGION	Usage Rate (%)	N ¹	Coefficient of Variation (%)	Standard Error (%)	95% Confidence Interval:		Z
					Lower	Higher	
<u>UPSTATE</u>							
Total	60.00	165,049	1.05	0.6313	58.76	61.24	-
Weekdays	60.45	139,276	1.17	0.7080	59.06	61.84	8.66*
Weekends	57.57	25,773	2.57	1.4792	54.67	60.47	
Rush Hour ²	61.54	68,059	1.95	1.1973	59.19	63.88	8.10*
Non-rush Hour	59.41	71,218	0.96	0.5729	58.29	60.53	
<hr/>							
<u>NEW YORK CITY</u>							
Total	55.52	323,314	2.86	1.5859	52.41	58.63	-
Weekdays	53.21	229,509	2.77	1.4717	50.33	56.10	41.29*
Weekends	61.16	93,805	5.14	3.1437	55.00	67.32	
Rush Hour ²	55.15	104,833	2.39	1.3153	52.57	57.72	17.03*
Non-rush Hour	51.59	124,675	3.83	1.9745	47.72	55.46	
<hr/>							
<u>LONG ISLAND</u>							
Total	57.54	128,691	1.48	0.8509	55.87	59.21	-
Weekdays	58.09	92,415	1.61	0.9361	56.26	59.93	6.31*
Weekends	56.14	36,277	3.03	1.7039	52.80	59.48	
Rush Hour ²	59.53	44,893	2.56	1.5224	56.54	62.57	8.59*
Non-Rush Hour	56.74	47,522	2.08	1.1775	54.43	59.05	
<hr/>							
¹ N based on weighted data							
² Rush/non-rush comparisons are based on weekday observations only							
* Significant at .05 level							

TABLE C.3

SEPTEMBER 1985
REGIONAL DIFFERENCES IN USAGE RATES FOR
TOTAL, WEEKDAY/WEEKEND, RUSH/NON-RUSH

REGION	Usage Rate (%)	N	Coefficient of Variation (%)	Standard Error (%)	95% Confidence Interval:		Z
					Lower	Higher	
<u>UPSTATE</u>							
Total	53.32	155,422	1.32	0.7056	51.93	54.70	-
Weekdays	53.40	129,308	1.51	0.8089	51.81	54.98	1.39
Weekends	52.93	26,114	3.26	1.7268	49.54	56.31	
Rush Hour	54.48	62,646	2.02	1.1011	52.32	56.64	7.57*
Non-rush Hour	52.38	66,661	1.65	0.8622	50.69	54.07	
<hr/>							
<u>NEW YORK CITY</u>							
Total	40.41	232,443	2.25	0.9100	38.62	42.19	-
Weekdays	40.10	181,800	2.66	1.0652	38.01	42.19	5.72*
Weekends	41.51	50,644	4.13	1.7162	38.14	44.87	
Rush Hour	41.40	86,300	3.17	1.314	38.83	43.98	10.77*
Non-rush Hour	38.92	95,499	3.32	1.2910	36.39	41.45	
<hr/>							
<u>LONG ISLAND</u>							
Total	47.33	107,965	2.43	1.1489	45.08	49.58	-
Weekdays	47.72	78,086	2.47	1.1802	45.41	50.03	4.18*
Weekends	46.30	29,879	3.14	1.4556	43.45	49.16	
Rush Hour	50.35	39,854	3.39	1.7087	47.01	53.70	15.02*
Non-Rush Hour	44.98	38,232	1.75	0.7874	43.43	46.52	

¹N based on weighted data

²Rush/non-rush comparisons are based on weekday observations only

* Significant at .05 level

TABLE D.1

COMPARISON OF USAGE RATES
FOR FOUR SELECTED STANDARD METROPOLITAN
STATISTICAL AREAS

SMSA	(1) October 1984			(2) January 1985			(3) April 1985			(4) September 1985		
	Usage Rate (%)	N ¹	Standard Error (%)	Usage Rate (%)	N ¹	Standard Error (%)	Usage Rate (%)	N ¹	Standard Error (%)	Usage Rate (%)	N ¹	Standard Error (%)
Albany	18.25	17,635	1.0308	75.45	14,888	1.1028	59.25	24,154	0.8421	54.03	21,713	1.5618
Buffalo	16.15	33,522	1.0610	62.90	27,160	1.5146	62.79	39,472	1.4944	57.42	31,760	1.2967
Nassau/Suffolk	16.76	89,568	1.2500	63.97	104,960	0.6236	57.54	128,691	0.8509	47.33	107,965	1.1449
Rochester	18.44	22,688	0.2279	71.89	25,612	1.3974	59.87	24,362	1.0083	55.78	24,974	1.5459

¹N based on weighted data

TABLE E.1

OCTOBER 1984
NIGHT USAGE RATES STATEWIDE, BY REGION,
AND BY DAY OF WEEK

VARIABLES	%	N ¹	Z
<u>STATEWIDE</u>	11.59	19,071	-
<hr/>			
<u>REGION</u>			
Upstate (1)	14.47	5,672	Z ₁₂ = 9.6*
New York City (2)	9.00	7,128	Z ₁₃ = 4.2*
Long Island (3)	11.93	6,271	Z ₂₃ = 5.6*
<hr/>			
<u>DAY OF WEEK²</u>			
Weekday	12.69	10,973	5.4*
Weekend	10.10	8,098	
<hr/>			
<u>REGION BY DAY OF WEEK²</u>			
<u>Upstate</u>			
Weekday	14.89	4,171	1.4
Weekend	13.32	1,501	
<u>New York City</u>			
Weekday	10.76	3,438	5.0*
Weekend	7.37	3,690	
<u>Long Island</u>			
Weekday	11.95	3,364	0.1
Weekend	11.90	2,907	
<hr/>			
¹ N based on unweighted data			
² Weekday night = Monday-Thursday Weekend night = Friday-Sunday			
* Significant at the .05 level			

TABLE E.2

APRIL 1985
NIGHT USAGE RATES STATEWIDE, BY REGION,
AND BY DAY OF WEEK

VARIABLES	%	N ¹	Z
<u>STATEWIDE</u>	49.73	18,080	-
<hr/>			
<u>REGION</u>			
Upstate (1)	52.63	7,459	$Z_{12} = 5.20^*$
New York City (2)	48.15	6,118	$Z_{13} = 5.91^*$
Long Island (3)	47.06	4,503	$Z_{23} = 1.12$
<u>DAY OF WEEK²</u>			
Weekday	50.17	12,334	1.74
Weekend	48.78	5,746	
<hr/>			
<u>REGION BY DAY OF WEEK²</u>			
<u>Upstate</u>			
Weekday	52.48	5,322	0.42
Weekend	53.02	2,137	
<u>New York City</u>			
Weekday	47.14	4,493	2.64*
Weekend	50.95	1,625	
<u>Long Island</u>			
Weekday	50.69	2,519	5.51*
Weekend	42.44	1,984	
<hr/>			
¹ N based on unweighted data			
² Weekday night = Monday-Thursday Weekend night = Friday-Sunday			
* Significant at the .05 level			

TABLE E.3

SEPTEMBER 1985
NIGHT USAGE RATES STATEWIDE, BY REGION,
AND BY DAY OF WEEK

VARIABLES	%	N ¹	Z
<u>STATEWIDE</u>	40.36	18,085	-
<u>REGION</u>			
Upstate (1)	47.65	7,291	Z ₁₂ = 20.81*
New York City (2)	30.37	6,608	Z ₁₃ = 4.34*
Long Island (3)	43.45	4,186	Z ₂₃ = 13.84*
<u>DAY OF WEEK²</u>			
Weekday	40.47	9,128	0.29
Weekend	40.26	8,957	
<u>REGION BY DAY OF WEEK²</u>			
<u>Upstate</u>			
Weekday	48.64	5,107	2.59*
Weekend	45.33	2,184	
<u>New York City</u>			
Weekday	26.09	2,844	6.58*
Weekend	33.61	3,764	
<u>Long Island</u>			
Weekday	39.76	1,177	3.01*
Weekend	44.90	3,009	
¹ N based on unweighted data			
² Weekday night = Monday-Thursday Weekend night = Friday-Sunday			
* Significant at the .05 level			

TABLE F.1

OCTOBER 1984

A COMPARISON OF DAY AND NIGHT USAGE RATES AT SELECTED SITES:
STATEWIDE, BY REGION, AND BY DAY OF WEEK

VARIABLES	Day Usage Rate		Night Usage Rate		Percent ² Change	Z
	%	N ¹	%	N ¹		
<u>STATEWIDE</u>	13.31	40,361	11.59	19,071	1.72	5.9*
<u>REGION</u>						
Upstate	16.35	9,343	14.47	5,672	1.88	3.1*
New York City	11.65	21,468	9.00	7,128	2.65	6.2*
Long Island	14.08	9,550	11.93	6,271	2.15	3.9*
<u>DAY OF WEEK</u> ³						
Weekday	13.14	29,516	12.69	10,973	0.45	1.2
Weekend	13.79	10,845	10.10	8,098	3.69	7.7*
<u>REGION BY DAY OF WEEK</u>						
<u>Upstate</u>						
Weekday	15.66	7,868	14.89	4,171	0.77	1.1
Weekend	20.07	1,475	13.32	1,501	6.75	4.9*
<u>New York City</u>						
Weekday	11.63	16,326	10.76	3,438	0.87	1.5
Weekend	11.71	5,142	7.37	3,690	4.34	6.7*
<u>Long Island</u>						
Weekday	14.04	5,322	11.95	3,364	2.09	2.8*
Weekend	14.14	4,228	11.90	2,907	2.24	2.7*

¹N based on unweighted data²Percent change is the absolute difference between day and night rates.

³Weekend day = Saturday and Sunday
Weekend night = Friday, Saturday and Sunday

* Significant at .05 level

TABLE F.2

APRIL 1985

A COMPARISON OF DAY AND NIGHT USAGE RATES AT SELECTED SITES:
STATEWIDE, BY REGION, AND BY DAY OF WEEK

VARIABLES	Day Usage Rate		Night Usage Rate		Percent ² Change	Z
	%	N ¹	%	N ¹		
<u>STATEWIDE</u>	52.12	42,842	49.73	18,080	2.39	5.40*
<u>REGION</u>						
Upstate	55.86	13,313	52.63	7,459	3.23	4.48*
New York City	47.43	9,373	48.15	6,118	-0.72	0.87
Long Island	51.84	20,156	47.06	4,503	4.78	5.79*
<u>DAY OF WEEK</u> ³						
Weekday	53.26	29,363	50.17	12,334	3.09	5.76*
Weekend	49.66	13,479	48.78	5,746	0.88	1.10
<u>REGION BY DAY OF WEEK</u>						
<u>Upstate</u>						
Weekday	56.43	10,406	52.48	5,322	3.95	4.71*
Weekend	53.84	2,907	53.02	2,137	0.82	0.53
<u>New York City</u>						
Weekday	47.06	6,113	47.14	4,493	-0.08	0.08
Weekend	48.13	3,260	50.95	1,625	-2.82	1.86
<u>Long Island</u>						
Weekday	53.64	12,844	50.69	2,519	2.95	2.70*
Weekend	48.67	7,312	42.44	1,984	6.23	4.93*
¹ N based on unweighted data ² Percent change is the absolute difference between day and night rates. ³ Weekend day = Saturday and Sunday Weekend night = Friday, Saturday and Sunday * Significant at .05 level						

TABLE F.3

SEPTEMBER 1985
A COMPARISON OF DAY AND NIGHT USAGE RATES AT SELECTED SITES:
STATEWIDE, BY REGION, AND BY DAY OF WEEK

VARIABLES	Day Usage		Night Usage		Percent ²	
	%	N ¹	%	N ¹	Change	Z
<u>STATEWIDE</u>	41.29	34,613	40.36	18,085	0.93	2.06*
<u>REGION</u>						
Upstate	52.58	9,895	47.65	7,291	4.93	6.39*
New York City	34.31	16,299	30.37	6,608	3.94	5.73*
Long Island	41.51	8,419	43.45	4,186	-1.94	2.27*
<u>DAY OF WEEK</u> ³						
Weekday	41.81	27,690	40.47	9,128	1.34	2.25*
Weekend	39.19	6,923	40.26	8,957	-1.07	1.36
<u>REGION BY DAY OF WEEK</u>						
<u>Upstate</u>						
Weekday	52.86	8,609	48.64	5,107	4.22	4.78*
Weekend	50.70	1,286	45.33	2,184	5.37	3.06*
<u>New York City</u>						
Weekday	34.66	12,676	26.09	2,844	8.57	8.78*
Weekend	33.09	3,623	33.61	3,764	-0.52	0.47
<u>Long Island</u>						
Weekday	41.11	6,405	39.76	1,177	1.35	0.86
Weekend	42.80	2,014	44.90	3,009	-2.10	1.46

¹N based on unweighted data

²Percent change is the absolute difference between day and night rates.

³Weekend day = Saturday and Sunday
Weekend night = Friday, Saturday and Sunday

* Significant at .05 level

TABLE F.4

OCTOBER 1984
A COMPARISON OF DAY AND NIGHT USAGE RATES AT SELECTED SITES:
STATEWIDE, BY REGION, AND BY DAY OF WEEK¹

VARIABLES	Day Usage Rate %	N ²	Night Usage Rate %	N ²	Percent ³ Change	Z
<u>STATEWIDE</u>	14.88	42,201	11.59	19,071	3.29	11.0*
<u>REGION</u>						
Upstate	16.35	9,343	14.47	5,672	1.88	3.1*
New York City	11.65	21,468	9.00	7,128	2.65	6.2*
Long Island	19.76	11,390	11.93	6,271	7.83	13.3*
<u>DAY OF WEEK⁴</u>						
Weekday	15.26	31,356	12.69	10,973	2.57	6.6*
Weekend	13.79	10,845	10.10	8,098	3.69	7.7*
<u>REGION BY DAY OF WEEK</u>						
<u>Upstate</u>						
Weekday	15.66	7,868	14.89	4,171	0.77	1.1
Weekend	20.07	1,425	13.32	1,501	6.75	4.9*
<u>New York City</u>						
Weekday	11.63	16,326	10.76	3,438	0.87	1.5
Weekend	11.71	5,142	7.37	3,690	4.34	6.7*
<u>Long Island</u>						
Weekday	23.11	7,162	11.95	3,364	11.16	13.5*
Weekend	14.14	4,228	11.90	2,907	2.24	2.7*

¹Includes data from one Long Island site which was excluded in the main analysis.

²N based on unweighted data

³Percent change is the absolute difference between day and night rates.

⁴Weekend day = Saturday and Sunday
Weekend night = Friday, Saturday and Sunday

* Significant at .05 level

TABLE F.5

APRIL 1985

A COMPARISON OF DAY AND NIGHT USAGE RATES AT SELECTED SITES:
STATEWIDE, BY REGION, AND BY DAY OF WEEK¹

VARIABLES	Day Usage Rate %	N ²	Night Usage Rate %	N ²	Percent ³ Change	Z
<u>STATEWIDE</u>	52.12	42,842	51.21	19,524	+0.91	1.86
<u>REGION</u>						
Upstate	55.86	13,313	52.63	7,459	-3.23	4.48*
New York City	47.43	9,373	50.80	6,860	-3.37	4.24*
Long Island	51.84	20,156	47.06	4,503	-4.78	5.79*
<u>DAY OF WEEK</u> ⁴						
Weekday	53.26	29,363	50.17	12,334	-3.09	5.76*
Weekend	49.66	13,479	51.51	6,488	-1.85	-2.45
<u>REGION BY DAY OF WEEK</u>						
<u>Upstate</u>						
Weekday	56.43	10,406	52.48	5,322	-3.95	4.71*
Weekend	53.84	2,907	53.02	2,137	-0.82	0.58
<u>New York City</u>						
Weekday	47.06	6,113	47.14	4,493	+0.08	0.08
Weekend	48.13	3,260	57.78	2,367	+9.65	-7.13*
<u>Long Island</u>						
Weekday	53.64	12,844	50.69	2,519	-2.95	2.70*
Weekend	48.67	7,312	42.44	1,984	-6.23	4.93*

¹Includes data from two New York City sites which were excluded in the main analysis.²N based on unweighted data³Percent change is the absolute difference between day and night rates.⁴Weekend day = Saturday and Sunday
Weekend night = Friday, Saturday and Sunday

* Significant at .05 level

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